

CLAIMS:

1. Device for recording information on a record carrier, which device comprises
 - recording means (22) for recording marks representing digitally encoded real-time information, in particular video, according to a predefined recording format,
 - an input unit (27) for receiving a data stream constituting an enhanced user program, the data stream comprising the real-time information and application data objects, at least one subset of the application data objects constituting data for providing to a user at least one interactive application while rendering the real-time information,
 - message means (94) for extracting messages from the data stream, the messages containing the application data objects,
- 5 - parsing means (95) for generating application control information, and
 - control means (20) for storing the messages in a message file separate from the real-time information as a series of the messages for the program and for storing the application control information in a message info file, the application control information including accessing information for accessing the messages in the message file.
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- 15 2. Device as claimed in claim 1, wherein the parsing means (95) are arranged for including for a message at least one of the following items as accessing information in the message info file:
 - a message number, the message number identifying the message in the series of the messages;
 - a message type indicator;
 - a start location in the message file;
 - length of the message;
 - number of a succeeding message.
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- 25 3. Device as claimed in claim 1 or 2, wherein the parsing means (95) are arranged for including active period information in the message info file, in particular a start time and end time with respect to a presentation time of the program.

4. Device as claimed in claim 1, wherein the message means (94) are arranged for removing redundant information from the messages extracted from the data stream.
5. Device as claimed in claim 4, wherein the message means (94) are arranged for removing as the redundant information header information of packets, in particular headers of transport stream packets or sections headers as used in compressed video data transmission (MPEG2), or download-data-block headers as used in multimedia data (MHP).
6. Device as claimed in claim 4, wherein the message means (94) are arranged for removing as the redundant information messages that are repeatedly transmitted, in particular in a data carousel.
7. Device for reading information from a record carrier for rendering an enhanced user program, which device comprises reading means (30) for reading marks representing digitally encoded real-time information, in particular video, according to a predefined recording format, and control means (20; 32) for providing to a user at least one interactive application based on at least one subset of application data objects while rendering the real-time information by retrieving application control information from a message info file, and by retrieving messages from a message file based on accessing information included in the application control information, the messages containing the application data objects, and the message file being stored separate from the real-time information.
8. Record carrier carrying information for constituting an enhanced user program, on which record carrier marks in a track (9) represent
 - digitally encoded real-time information, in particular video, according to a predefined recording format,
 - a message file (102) separate from the real-time information, the message file comprising messages containing application data objects, at least one subset of the application data objects constituting data for providing to a user at least one interactive application while rendering the real-time information, and
 - a message info file (101) containing application control information including accessing information for accessing the messages in the message file.

9. Record carrier as claimed in claim 8, wherein the message info file (101) contains as the accessing information for a message at least one of the following items:
 - a message number, the message number identifying the message in the series of the messages;
- 5 - a message type indicator;
- a start location in the message file;
- length of the message;
- start of an active period;
- end of the active period;
- 10 - number of succeeding message.

10. Method of recording information on a record carrier, which method comprises
 - recording digitally encoded real-time information, in particular video, according to a predefined recording format,
- 15 - receiving a data stream constituting an enhanced user program, the data stream comprising the real-time information and application data objects, at least one subset of the application data objects constituting data for providing to a user at least one interactive application while rendering the real-time information, and
 - extracting messages from the data stream, the messages containing the application data
- 20 objects,
- generating application control information, and
 - storing the messages in a message file separate from the real-time information as a series of the messages for the program and storing the application control information in a message info file, the application control information including accessing information for accessing
- 25 the messages in the message file.

11. Computer program product for recording information, which program is operative to cause a processor to perform the method as claimed in claim 10.